Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**The Biosphere Unit Exam**

**Multiple Choice:** Circle the answer that best answers the question. Each Question is worth 3 points.

1. Ecology is the study of…
   1. The interaction of cells
   2. **The interaction of all organisms**
   3. The interaction of plants and animals
   4. The interaction of bacteria and their host
2. The combined portion of the planet in which all life exists is the…
   1. Ecosystem
   2. Biome
   3. Atmosphere
   4. **Biosphere**
3. A \_\_\_\_\_\_\_\_\_\_ is the smallest level of organization.
   1. **Species**
   2. Population
   3. Community
   4. Ecosystem
4. What is not a common approach used by ecologists?
   1. Observing
   2. Experimenting
   3. Modeling
   4. **Surveying**
5. In the nitrogen cycle, bacteria that live on the roots of plants…
   1. Break down nitrogen compounds into gas
   2. Denitrify nitrogen compounds
   3. Change nitrogen gas into plant proteins
   4. **Change nitrogen gas into ammonia**
6. Autotrophs can be considered…
   1. Decomposers
   2. Primary Consumers
   3. **Producers**
   4. Secondary Consumers
7. The use of chemical energy to produce carbohydrates is…
   1. Photosynthesis
   2. **Chemosynthesis**
   3. Transpiration
   4. Evaporation
8. Energy stored by producers can be passed through an ecosystem along a…
   1. **Food chain**
   2. Food web
   3. Energy pyramid
   4. Biomass pyramid
9. What percent of energy is transferred to organisms at the next trophic level?
   1. 5%
   2. **10%**
   3. 15%
   4. 20%
10. Which of the following organism is typically a decomposer?
    1. A wolf
    2. A tree
    3. A giraffe
    4. **A fungus**

**True/False:** Circle either true or false for the following questions. Each question is worth 3 points.

T/**F**: A community is less complex than a population.

T/**F**: All producers are photosynthetic.

**T**/F: Phosphorous is necessary for life on Earth.

T/**F**: Photosynthesis and chemosynthesis are the same process.

**T**/F: Autotrophs have the ability to produce their own energy.

**T**/F: Sunlight is the primary energy source on planet Earth.

**T**/F: Herbivores, carnivores, omnivores and detritivores are all consumers.

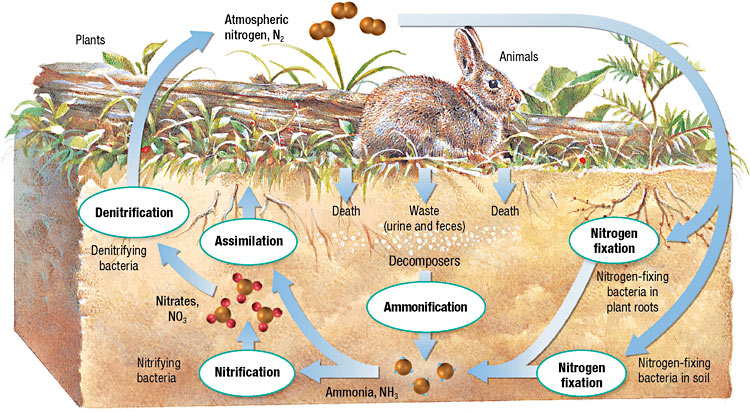
T/**F**: A trophic level can contain more than one step in a food chain.

T/**F**: Matter can be destroyed within and between ecosystems.

**T**/F: Plants require bacteria to help them use nitrogen in the atmosphere.

**Fill in the blank:** Fill in the blanks below with the best answer from the word bank. Each blank is worth 2 points.

**Word Bank:** Ammonification, Assimilation, Denitrification, Nitrification, Nitrogen fixation

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**Short answer:** Respond to the prompts below. Each question is worth 5 points.

1. Why do farmers fertilize their crops with nitrogen and phosphorous?

**Farmers fertilize their crops with nitrogen and phosphorous because they are both necessary nutrients for plant growth.**

1. What would happen if one of these nutrients were in insufficient amounts?

**If one of these nutrients were in insufficient amounts, then the plant growth would be limited. This is known as a limiting nutrient.**

1. What could happen if these nutrients were introduced into another environment?

**If these nutrients were introduced into another environment, they would increase the growth rate of any plants in that area because they would be increasing the levels of two common limiting nutrients.**

**Multiple Choice Section:**

1. Define Ecology and Biosphere

Knowledge

2. List the levels of organization in order of size.

Comprehension

3. Define a species.

Knowledge

4. Discuss the methods used by ecologists to study living things and their environment.

Knowledge

5. Outline the water, nutrient, carbon, nitrogen and phosphorous cycles.

Knowledge

6. Discuss the process by which plants produce biomass and energy.

Comprehension

7. Identify the differences between photosynthesis and chemosynthesis.

Knowledge

8. Outline a food chain and food web.

Knowledge

9. Apply the principles that dictate the proportions of these pyramids.

Comprehension

10. Discuss the importance of detritivores and decomposers.

Comprehension

True/False

1. List the levels of organization in order of size.

Knowledge

2. Discuss the process by which plants produce biomass and energy.

Knowledge

3. Outline the water, nutrient, carbon, nitrogen and phosphorous cycles.

Comprehension

4. Identify the differences between photosynthesis and chemosynthesis.

Comprehension

5. Discuss the process by which plants produce biomass and energy.

Comprehension

6. Write out the equations for photosynthesis and chemosynthesis.

Comprehension

7. Define the roles of producers and consumers in an ecosystem.

Knowledge

8. Outline a food chain and food web.

Comprehension

9. Apply the principles that dictate the proportions of these pyramids.

Comprehension

10. Outline the water, nutrient, carbon, nitrogen and phosphorous cycles.

Comprehension

Fill in the blank:

Outline the water, nutrient, carbon, nitrogen and phosphorous cycles.

Application

Short answer:

Explain nutrient limitation providing one example from nature.

Analysis